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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 4 :		(11) International Publication Number:
A43B 7/02	A1	WO 86/ 05663
		(43) International Publication Date: 9 October 1986 (09.10.86)

(21) International Application Number: PCT/SE86/00121

(22) International Filing Date: 21 March 1986 (21.03.86)

(31) Priority Application Number: 8501450-4

(32) Priority Date: 25 March 1985 (25.03.85)

(33) Priority Country: SE

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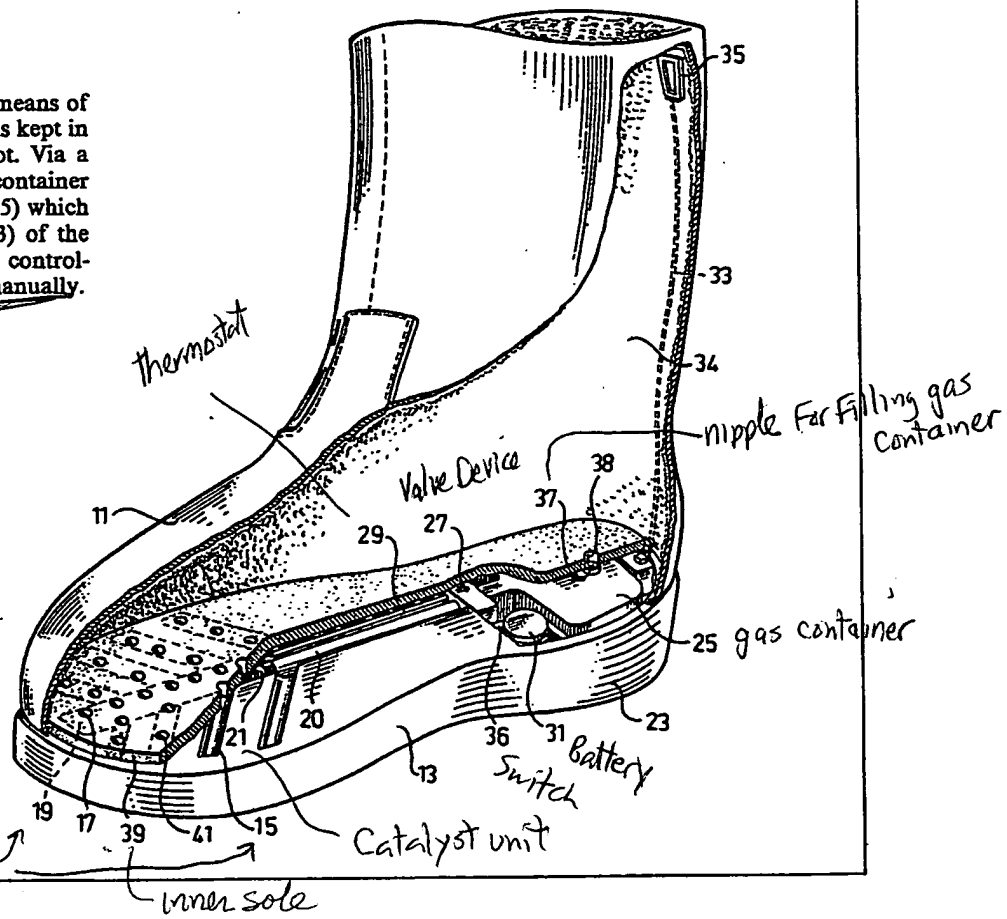
(81) Designated States: AT (European patent), BE (European patent), CH (European patent), DE (European patent), FI, FR (European patent), GB (European patent), IT (European patent), LU (European patent), NL (European patent), SE (European patent), US.

Published
With international search report.

(54) Title: BOOT WARMER

(57) Abstract

A device for heating of boots by means of a catalytically transformable gas which is kept in a container (25) in the heel of the boot. Via a valve (27) and a catalyst unit (21) the container communicates with a duct system (19, 15) which distributes heated gas over the sole (13) of the boot. The rate of the emanating gas is controllable by means of a thermostat and/or manually.



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Boot Warmer

The invention relates to a heating device for footwear, particularly boots, sports shoes or similar. People staying outdoors in cold weather and moving merely slightly, such as hunters and fishermen, will easily get cold feet and require heat supply to the boots. Devices for this purpose have been proposed, comprising a heat source and a system of ducts extending therefrom for distributing heated gas.

The invention relates to a device of this kind and has for its object to provide a more agreeable heating than that obtained earlier, and also to provide a better constructive solution. The essential features of the device required thereto are stated in the following claims.

An perspective view of an exemplary embodiment of a heated boot according to the invention is shown in the accompanying drawing, certain parts being broken away.

The boot shown is essentially of a conventional design and consists essentially of an upper part 11 of leather, a rubber sole 13 attached thereto and a leg 34. The sole is formed with a system of ducts or grooves 15 communicating with a central main conduit 19. Inserted therein is a tube 20 surrounding a catalyst unit 21 of porous material. The interior of the sole heel 23 is hollowed out and forms a space, in which a gas container 25 is located. The upper face thereof is flat and is situated at the level of the upper face of the rest of the sole. At the fore end of that space there is provided a valve device 27, controlled by a thermostat 29, and a small battery 31 supplying current to a filament inserted into the catalyst unit 21. The container 25 holds gas which is supplied via the valve device 27 to the catalyst unit 21 and from there further on into the duct system 19, 15. The valve 27

→ The slender wire of tungsten, carbon, or other material

is controlled by the thermostat 29, and besides or alternatively, controlled in a manual manner by means of a string 33 inserted in the back strip of the boot and connected at its upper end to a tow eyelet 35. By the same the valve 27 can be opened and closed and also controlled in order to vary the rate of the gas flow. The string 33 is also connected to a switch 36 inserted in the conduit between the battery 31 and a filament inserted in the catalyst unit 21. Inserted in the flat upper face of the container 25 is a nipple 37, through which the container can be connected to and refilled with gas from an exterior storage container (not shown). Said gas is of a kind which is very rich in energy and which, without supply of air, can be catalytically transformed to give off heat. Certain hydrocarbon compounds have such a quality. Due to the overpressure in the container 25 the gas is caused to flow through the valve 27 to the catalyst unit 21 where heat is generated, and therefrom the heated gas is spread evenly over the toe part of the sole by the branched duct system. The rubber sole is covered by an inner sole 39, e.g. of plastic material, which is provided with perforation holes 17, 41. Through these holes the heated gas is directed towards the toes and the fore part of the foot of the bearer and then passes along and around his foot and finally up and out through the boot leg 34.

The heating is started by a pull of the eyelet 35, whereby the valve 27 is opened and also the battery circuit closed during a sufficiently long time for effecting initiation of the function of the catalyst. In case the thermostat is missing or is out of function, the gas flow can be controlled manually by withdrawing the eyelet 35 more or less. The thermostat should also be resettable in order to provide a temperature of the boot adapted to the outdoor temperature and individual desires. Interrupting of the gas flow takes place by a new pull of the eyelet 35.

Supervision and possible replacement of details are carried out

from the interior of the boot, and there are no through holes extending to its outside.

The inner sole 39 should be easy to remove in order to allow cleaning and easy access to the details located within the recess in the heel. Straight above the nipple 37 the inner sole has a hole 38, through which the end of a hose can be inserted in order to be connected to the nipple, when the container 25 should be refilled with compressed gas taken from a larger exterior gas tank.

CLAIMS

1. Heating device for footwear, comprising a heating source and a system of ducts extending therefrom for distributing heated gas, characterized in that the heating source consists of a container (25) placed in the boot and refillable with a gas or gas mixture of such a kind as to give off heat by catalytic transformation, and in that the container is connected to the duct system (19, 15) via a conduit into which a catalyst unit (21) and means for controlling the rate of the gas flow are inserted.

2. Device according to claim 1, characterized in that said control means comprises a manually operable valve (27) for closing and/or control.

3. Device according to claim 2, characterized in that the valve (27) located in the heel or sole of the boot, is operatively connected via a string (33) to a tow eyelet (35) or similar accessible from the exterior.

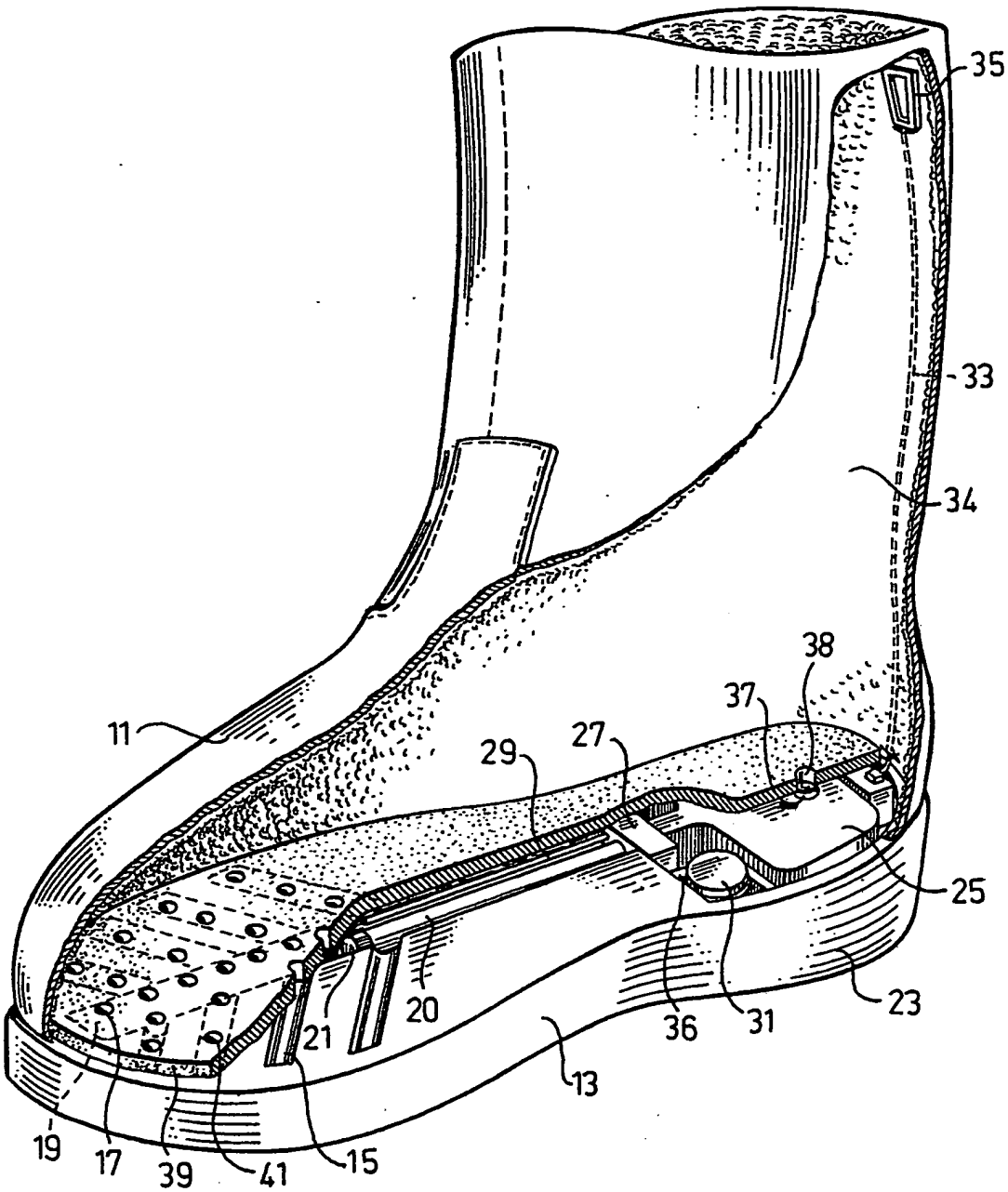
4. Device according to claim 1, characterized in that the said control means comprises a valve (27) controlled by a thermostat (29).

5. Device according to any of the preceding claims, characterized by an ignition means for initiating the catalytic reaction.

6. Device according to claim 5, characterized in that the ignition means comprises an electric circuit supplied by a battery (31) and closable by a switching device (36) operable from the exterior.

7. Device according to claims 2 and 5, characterized in that the switching device (36) and the valve (27) are operable in common.

8. Device according to claim 1, characterized in that the container (25) located in the heel of the boot has a flat upper face, into which a nipple (27) for the refilling of gas from a larger storage container is inserted.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INTERNATIONAL SEARCH REPORT

International Application No PCT/SE86/00121

I. CLASSIFICATION OF SUBJECT MATTER (If several classification symbols apply, indicate all) [6]

According to International Patent Classification (IPC) or to both National Classification and IPC [4]

A 43 B 7/02

II. FIELDS SEARCHED

Minimum Documentation Searched [7]

Classification System	Classification Symbols
IPC	A 43 B 7/02, /04
Nat Cl	71a:7/02, /04
US Cl	36: 2.6

Documentation Searched other than Minimum Documentation to the Extent that such Documents are included in the Fields Searched [8]

SE, NO, DK, FI classes as above

III. DOCUMENTS CONSIDERED TO BE RELEVANT [9]

Category [10]	Citation of Document, [11] with indication, where appropriate, of the relevant passages [12]	Relevant to Claim No. [13]
A	FR, A, 2 080 146 (BERTINCOURT M) 12 November 1971	1

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IV. CERTIFICATION

Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report
1986-06-12	1986 -06- 16
International Searching Authority	**Signature of Authorized Officer**
Swedish Patent Office	Sune Söderling MJ